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ABSTRACT

This study investigated personality and academic achievement differences between athletic and non-athletic ninth and tenth grade girls in a Canadian school. Athletes participated in at least one of four interscholastic sports while the non-athletes were involved in only activities associated with a required Physical Education course. Differences between the groups on 14 scales of the California Personality Inventory were analyzed by means of the t test. Chi-square analyses were conducted on the distributions of year-end letter grades in English, Mathematics, Physical Education, Science and Social Studies. The results indicated that at both grade levels athletes rated significantly higher than non-athletes on the personality factors of dominance, sociability and achievement via conformance. At the ninth grade level, the athletes obtained a significantly larger proportion of high grades in all subject areas than did the non-athletes. At the tenth grade level, the distribution of letter grades in Science and Physical Education were significantly different between the two groups, with more of the high grades being awarded to the athlete group. (Author)

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# PERSONALITY AND ACHIEVEMENT OF ATHLETIC AND NON-ATHLETIC HIGH SCHOOL GIRLS

by

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# PERSONALITY AND ACHIEVEMENT OF ATHLETIC AND NON-ATHLETIC HIGH SCHOOL GIRLS

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Abstract

This study investigated personality and academic achievement differences between athletic and non-athletic ninth and tenth grade girls. Athletes participated in at least one of four interscholastic sports while the non-athletes were involved in only activities associated with a required Physical Education course. Differences between the groups on fourteen scales of the California Personality Inventory were analyzed by means of the t test. Chi-square analyses were conducted on the distributions of year end letter grades in English, Mathematics, Physical Education, Science and Social Studies.

The results indicated that at both grade levels athletes rated significantly higher than non-athletes on the personality factors of dominance, sociability and achievement via conformance. At the ninth grade level the athletes obtained a significantly larger proportion of high grades in all subject areas than did the non-athletes. At the tenth grade level the distribution of letter grades in Science and Physical Education were significantly different between the two groups with more of the high grades being awarded to the athlete group.

# PERSONALITY AND ACHIEVEMENT OF ATHLETIC AND NON-ATHLETIC HIGH SCHOOL GIRLS

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Relationships between personality and school achievement using athletes and non-athletes as subjects have been exhaustively investigated over the last forty years. The vast majority of such studies have dealt with boys and men. Female investigations are very rare and those available are mainly concerned with college samples ( 1,3,4,5,6 ). Such omissions in research are to be deplored--particularly in light of the current powerful thrust of women's lib. We cannot assume that conclusions based on male data can be generalized to girls and women.

If, as contemporary mythology would have it, athletics are valuable "character building" and ego developing devices for the male, then might not such benefits accrue to the female as well? Yet, another current myth, a hangover from Victorian days, militates against full involvement of the female in athletics. Such paradoxical thinking merits study. The present exploratory study therefore investigates the relationships between adolescent female athletes and non-athletes using fourteen personality traits and five school achievement measures as dependent variables.

## Method

### Selection of Subjects

Subjects were 82 Ninth Grade and 84 Tenth Grade girls attending seven Junior Secondary Schools in Victoria, British Columbia in 1972. Students in all schools completed a check list which revealed participants and non-

participants in athletics.

Students who had been active during the current school year on a representative team were classified as Athletes. Students who participated in out-of-school sports were not included in the study. Thus the athlete group received maximum identification with the school through intensive participation in school related sports. The sports areas were basketball, grass hockey, track and field, and volleyball.

Non-athletes were randomly chosen from a group of students who, because they did not wish to, did not take part in any type of sports beyond that required by the Physical Education course. Non-participants due to medical reasons were excluded from the study. Physical Education teachers in all schools validated both the athlete and non-athlete student self-classifications.

Personality Measurement

The California Personality Inventory, hereafter referred to as the CPI, was administered in April, 1972 in order to measure the personality traits of athletes and non-athletes. Two research assistants administered the inventory after receiving special training. Fourteen scales of the CPI were selected because they seemed to possess sufficient validity and reliability for measuring important personality traits of adolescent girls. In order that the testing would be completed within the standard one hour class period, the following scales were dropped from the inventory: Social Presence, Communality, Psychological Mindedness, and Flexibility. These scales were eliminated because they represented some of the least reliable measures in the inventory (2).

The CPI scales are constructed so that higher scores tend to measure

more socially desirable behaviour. Simple definitions of the fourteen scales, as divided into four broad classes, are as follows:

Class I. Measures of poise, ascendancy, and self-assurance

Do (dominance) - Assesses factors of leadership ability, dominance, persistence, and social initiative.

Cs (capacity for status) - Serves as an index of an individual's capacity for status (not his actual or achieved status). The scale attempts to measure the personal qualities and attributes which underlie and lead to status.

Sy (sociability) - Identifies persons of outgoing, sociable, participative temperament.

Sa (self-acceptance) - Assesses factors such as sense of personal worth, self-acceptance, and capacity for independent thinking and action.

Wb (sense of well-being) - Identifies persons who minimize their worries and complaints, and who are relatively free from self-doubt and disillusionment.

Class II. Measures of socialization, maturity, and responsibility

Re (responsibility) - Identifies persons of conscientious, responsible, and dependable disposition and temperament.

So (socialization) - Indicates the degree of social maturity, integrity, and rectitude which the individual has attained.

Sc (self-control) - Assesses the degree and adequacy of self-regulation and self-control and freedom from impulsivity and self-centeredness.

To (tolerance) - Identifies persons with permissive, accepting, and non-judgmental social beliefs and attitude.

Gi (good impression) - Identifies persons capable of creating a favourable impression and who are concerned about how others react to them.

Class III. Measures of achievement potential and intellectual efficiency

Ac (achievement via conformance) - Identifies those factors of interest and motivation which facilitate achievement in any setting where conformance is a positive behaviour.

Ai (achievement via independence) - Identifies those factors of interest and motivation which facilitate achievement in any setting where autonomy and independence are positive behaviours.

Ie (intellectual efficiency) - Indicates the degree of personal and intellectual efficiency which the individual has attained.

Class IV. Measures of interest modes

Fe (femininity) - Assesses the masculinity or femininity of interests, (High scores indicate more feminine interests, low scores more masculine).

Achievement Measures

In July, 1972, final letter grades in English, Mathematics, Science, Social Studies, and Physical Education were collected from the schools' permanent student records. The following grades were used in all schools and are assumed to have a common meaning: A, B, C+, C, C-, P, D, E, and F. Grades E and F are failing grades while P is a special adjudicated grade converted from either a C- or a D.

Statistical Analysis

Differences between the raw score means on the fourteen CPI scales of the athlete and non-athlete groups at both the ninth grade and tenth grade levels were tested for significance by using the t-test of differences between independent means. The .05 level (two-tailed test) was selected as

the criterion of statistical significance. CPI profiles charts were prepared using standard scores in order that the profile of each group at the two grade levels could be compared.

Chi-square tests were used to determine whether the distributions of grades for the Athletes and Non-athletes differed significantly from chance distributions. In most cases, letter-grade frequencies were combined to yield the following four categories: Category I - A, B; Category II - C+, C, C-; Category III - P; Category IV - D, E, F. The .05 level (two-tailed test) was selected as the upper limit for significance.

## Results

### Personality Differences

Ninth grade subjects. Table 1 presents a comparison of the CPI mean scores of the ninth grade athletes and non-athletes. Athletes obtained significantly higher mean scores than non-athletes on three of the five scales measuring Poise, Ascendancy, and Self-assurance. No significant differences were found between the two groups on the five scales measuring Socialization, Maturity, and Responsibility. On the remaining four scales, the athletes scored significantly higher on the Achievement via Conformance and on the Intellectual Efficiency scales.

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Insert Table 1 about here

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Tenth grade subjects. Comparisons of the CPI mean scores of the tenth grade athletes and non-athletes are shown in Table 2. Athletes obtained significantly higher mean scores than non-athletes on two of the five scales measuring Class I variables. Of the remaining nine scales,

only the Responsibility and Achievement via Conformance showed significant differences, with the athletes obtaining the higher mean values.

Scales of Dominance, Sociability, and Achievement via Conformance measured athletes sfgnificantly higher than non-athletes in both ninth and tenth grade samples. None of the fourteen scales measured non-athletes significantly higher than athletes.

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Insert Table 2 about here

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Achievement Differences

Ninth grade subjects. Table 3 shows the frequency distributions of letter grades assigned to ninth grade girls in four academic areas as well as in Physical Education. Chi-square analysis showed that in all subject areas the athlete group received a significantly larger proportion of high grades than did the non-athlete group.

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Insert Table 3 about here

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Tenth grade subjects. Frequency distributions of letter grades assigned to tenth grade girls are presented in Table 4. Distributions of letter grades in Science and Physical Education were significantly different between the two groups with more of the high grades being awarded to the athlete group. Letter grade distributions in English, Mathematics, and Social Studies were similar to those expected by chance.

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Insert Table 4 about here

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## Discussion

### Personality

The results of this study revealed that there were significant personality differences between female athletes and non-athletes on three scales of the CPI. All three differences favoured the athletes. Two of the scales; namely, Dominance and Sociability, are measures within the broad category of Poise, Ascendancy and Self-Assurance, while Achievement via Conformance is within the category of Achievement Potential and Intellectual Efficiency. The following interpretations are based on the CPI manual.

On the Dominance scale, the significant differences suggest that the greater the degree of athletic competence, particularly in the team sports studied, the more aggressive, persistent, and potentially leader-like the individual.

The significant difference on the Sociability variable suggests the athletes tend to be more outgoing, enterprising, and ingenious as well as more competitive and forward.

Results showing significant differences on the Achievement via Conformance scale suggest that the following descriptive terms could be used to a greater extent to classify the athletes than the non-athletes: co-operative, organized, responsible, stable and sincere; persistent and industrious; and valuing intellectual activity and intellectual achievement.

The above interpretations must be considered as highly tentative because the mean scores for both groups on the various scales were well below the average for females in general. This fact suggests the possibility that the CPI might not be an appropriate measure for assessing personality characteristics of fourteen and fifteen year old girls.

Achievement

The superior achievement of the athletes in the area of Physical Education is what one should expect due to the method employed in selecting the two groups. The results therefore lend validity to the procedure used in categorizing the subjects as either athletes or non-athletes.

One of the most important findings is the large drop in relative achievement of the athletic group between the ninth and tenth grades. When comparing the chi-square values across grades, one finds a downward shift for the athletes in all subject areas. The reasons for this change can only be speculative. Some of the possible explanations might include the following: (a) The time devoted to athletics in the tenth grade (by athletes) might consume a greater proportion of the individual's time than in the ninth grade thus restricting the amount of study time available. (b) The relative pressures on the tenth grade athlete girls might increase in the area of heterosexual relations and thus cause them to devote less attention to the academic aspects of school life.

Within the limits of this study it is not possible to discuss cause and effect relationships. We cannot say that athletic participation aided school achievement for the ninth grade girls nor can we say that high academic achievement had a positive effect on sports participation. Similarly, because of the multitudinous factors affecting personality development which were not controlled or varied in this study, it is difficult to assess the effects of sports participation alone on personality.

Recommendations

This preliminary study has revealed problems that should be further explored. Future research might be concerned with measuring achievement

differences with academic aptitude controlled statistically. There is the possibility that girls who are high achievers in athletics are also somewhat more advanced in mental maturity.

Family pressures and peer expectations, particularly with reference to the sports participation of females, most likely form important influences on the athletes. These factors should be used as moderator variables in future studies.

The present study was mainly concerned with team sports. A comparison of individual versus team athletes might reveal important data. The high degree of social interaction and feelings of team spirit involved in group sports might cause the team athletes to be a unique population.

The whole social milieu of the school sports program should be considered and particularly its effect on the young female. This would include the manner in which the program is conducted, the emphasis placed upon the program, and the leadership involved in the program.

A final recommendation is that longitudinal studies be conducted with young female athletes. A long term study would allow more precise determination of the possible developmental phases of athletic abilities and interests.

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TABLE 1

Comparison of Mean Scores of Ninth Grade Female Athletes and Non-Athletes on Scales of the California Psychological Inventory

| Scale | Athletes n = 36 | | Non-Athletes n = 43 | | t |
|---|---|---|---|---|---|
| | Mean | SD | Mean | SD | |
| Dominance | 22.60 | 5.79 | 18.75 | 5.03 | 3.16[b] |
| Capacity for Status | 14.40 | 3.99 | 12.30 | 2.41 | 2.84[b] |
| Sociability | 22.45 | 5.01 | 18.50 | 4.66 | 3.64[c] |
| Self Acceptance | 19.93 | 3.61 | 19.13 | 2.76 | 1.11 |
| Sense of Well-Being | 27.98 | 6.21 | 27.05 | 5.16 | 0.72 |
| Responsibility | 23.52 | 6.40 | 21.30 | 4.79 | 1.75 |
| Socialization | 33.57 | 7.87 | 31.50 | 5.30 | 1.37 |
| Self-Control | 19.29 | 6.77 | 19.57 | 5.92 | -0.20 |
| Tolerance | 14.69 | 5.59 | 13.07 | 3.68 | 1.51 |
| Good Impression | 11.38 | 4.72 | 9.80 | 4.21 | 1.57 |
| Achievement via Conformance | 19.90 | 5.12 | 17.77 | 3.33 | 2.19[a] |
| Achievement via Independence | 14.48 | 3.79 | 14.55 | 3.01 | -0.09 |
| Intellectual Efficiency | 32.10 | 5.73 | 28.72 | 5.51 | 2.67[b] |
| Femininity | 22.40 | 3.18 | 23.10 | 3.58 | -0.91 |

[a] $p < .05$
[b] $p < .01$
[c] $p < .001$

TABLE 2

Comparison of Mean Scores of Tenth Grade Female Athletes and Non-Athletes on Scales of the California Psychological Inventory

| Scale | Athletes n = 38 | | Non-Athletes n = 46 | | t |
|---|---|---|---|---|---|
| | Mean | SD | Mean | SD | |
| Dominance | 22.74 | 6.18 | 19.46 | 6.41 | 2.34[a] |
| Capacity for Status | 14.45 | 3.73 | 13.20 | 3.97 | 1.46 |
| Sociability | 22.50 | 4.77 | 19.33 | 5.05 | 2.90[b] |
| Self Acceptance | 20.39 | 4.26 | 19.07 | 4.16 | 1.42 |
| Sense of Well-Being | 28.68 | 5.71 | 27.83 | 6.42 | 0.63 |
| Responsibility | 24.71 | 5.30 | 22.04 | 5.01 | 2.33[a] |
| Socialization | 34.03 | 6.23 | 31.02 | 7.98 | 1.87 |
| Self-Control | 19.63 | 6.38 | 20.78 | 6.87 | -0.78 |
| Tolerance | 14.84 | 3.95 | 15.70 | 4.58 | -0.89 |
| Good Impression | 11.13 | 3.85 | 9.85 | 4.34 | 1.40 |
| Achievement via Conformance | 20.16 | 4.18 | 18.11 | 4.77 | 2.04[a] |
| Achievement via Independence | 15.18 | 3.50 | 15.96 | 4.05 | -0.91 |
| Intellectual Efficiency | 31.21 | 5.24 | 31.00 | 6.85 | 0.15 |
| Femininity | 22.74 | 3.27 | 22.98 | 2.35 | -0.38 |

[a] $p < .05$
[b] $p < .01$

TABLE 3

Frequency of Letter Grades Assigned to

*Ninth Grade Female Athletes* and Non-Athletes

in Five Subject Areas

| Subject | Athletic Category | Letter Grades | | | | |
|---|---|---|---|---|---|---|
| | | A, B | C+, C, C- | P | D, E, F | |
| English | Athlete | 22 | 17 | 2 | 1 | $\chi^2 = 18.56$ |
| | Non-Athlete | 5 | 21 | 12 | 2 | df = 3<br>$p < .001$ |
| Mathematics | Athlete | 19 | 15 | 5 | 3 | $\chi^2 = 9.63$ |
| | Non-Athlete | 7 | 16 | 7 | 10 | df = 3<br>$p < .05$ |
| Physical Education | Athlete | 20 | 16 | 6 | 0[a] | $\chi^2 = 25.7$ |
| | Non-Athlete | 0 | 23 | 16 | 1[a] | df = 2<br>$p < .001$ |
| Science | Athlete | 17 | 20 | 4 | 1 | $\chi^2 = 21.36$ |
| | Non-Athlete | 2 | 18 | 12 | 8 | df = 3<br>$p < .001$ |
| Social Studies | Athlete | 17 | 19 | 4 | 2 | $\chi^2 = 12.05$ |
| | Non-Athlete | 4 | 21 | 12 | 2 | df = 3<br>$p < .01$ |

[a]Frequencies were dropped from the calculation because more than 20 percent of the cells had expected frequencies of less than 5.

TABLE 4

Frequency of Letter Grades Assigned to

Tenth Grade Female Athletes and Non-Athletes

in Five Subject Areas

| Subject | Athletic Category | Letter Grades | | | | |
|---|---|---|---|---|---|---|
| | | A, B | C+, C, C- | P | D, E, F | |
| English | Athlete | 11 | 22 | 3 | 2 | $\chi^2 = 4.36$ |
| | Non-Athlete | 8 | 27 | 10 | 1 | df = 3<br>p > .05 |
| Mathematics | Athlete | 10 | 17 | 9 | 2 | $\chi^2 = 6.44$ |
| | Non-Athlete | 4 | 19 | 17 | 6 | df = 3<br>p > .05 |
| Physical Education | Athlete | 18 | 12 | 8 | 0[a] | $\chi^2 = 18.1$ |
| | Non-Athlete | 3 | 24 | 18 | 1[a] | df = 2<br>p < .001 |
| Science | Athlete | 8 | 23 | 6 | 1 | $\chi^2 = 8.99$ |
| | Non-Athlete | 1 | 29 | 14 | 2 | df = 3<br>p < .05 |
| Social Studies | Athlete | 12 | 23 | 0[a] | 3 | $\chi^2 = 3.2$ |
| | Non-Athlete | 12 | 23 | 1[a] | 10 | df = 2<br>p > .05 |

[a]Frequencies were dropped from the calculation because more than 20 percent of the cells had expected frequencies of less than 5.